

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
Patrick Matthews et al.) Group Art Unit: 1797
Application No.: 10/740,265) Examiner: MCAVOY, ELLEN M
Filed: December 17, 2003) Confirmation No.: 1917
For: METHOD AND SYSTEM FOR)
PREVENTING CLATHRATE)
HYDRATE BLOCKAGE)
FORMATION IN FLOW LINES BY)
ENHANCING WATER CUT)

APPEAL BRIEF

Mail Stop APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is from the final Office Action mailed August 8, 2007, and the Notice of Panel Decision from Pre-Appeal Brief Review mailed December 10, 2007, rejecting claims 1-26, which are reproduced as the Claims Appendix of this brief.

I. Real Party in Interest

Chevron U.S.A. Inc. is the real party in interest and the assignee of the present application.

II. Related Appeals and Interferences

The Appellant's legal representative, or assignee, does not know of any other appeal or interferences which will affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of Claims

The final rejection of pending claims 1-26 is hereby appealed.

IV. Status of Amendments

No claim amendments were filed subsequent to final rejection.

V. Summary of Claimed Subject Matter

Independent claim 1 is directed to a method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid¹. The method comprises adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid² and transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid³. The water cut enhanced hydrocarbon containing

¹ See, for example, specification, Page 2, Lines 32-33.

² See, for example, specification, Page 2, Line 33 – Page 3, Line 2.

³ See, for example, specification, Page 3, Lines 2-3.

fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine⁴. Hydrate formation blockage is inhibited from forming within the flow line by the addition of the water⁵.

Independent claim 14 is directed to a system for preventing the formation of hydrate blockage in a flow line⁶. The system comprises a flow line for transporting a hydrocarbon containing fluid⁷; a water injection conduit fluidly connected to the flow line to add water to the flow line⁸, the water injection conduit being in fluid communication with one of a source of sea water, a source of fresh water, a subsea well or water produced from fluids from a hydrocarbon producing well bore⁹; and a hydrocarbon source which is in fluid communication with the flow line to provide a hydrocarbon containing fluid to the flow line¹⁰. Water may be added to the flow line from the water injection conduit to produce a water cut enhanced hydrocarbon containing fluid¹¹. The water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine¹².

Independent claim 24 is directed to a method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid¹³. The method comprises adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon

⁴ See, for example, specification, Page 2, Lines 8-22; Page 3, Lines 26-27; and Page 8, Lines 15-28.

⁵ See, for example, specification, Page 3, Lines 3-6.

⁶ See, for example, specification, Page 3, Lines 30-31.

⁷ See, for example, specification, Page 3, Lines 31-32.

⁸ See, for example, specification, Page 3, Line 32 – Page 4, Line 1.

⁹ See, for example, specification, Page 4, Lines 2-8.

¹⁰ See, for example, specification, Page 4, Lines 1-6.

¹¹ See, for example, specification, Page 2, Line 33 – Page 3, Line 2.

¹² See, for example, specification, Page 2, Lines 8-22; Page 3, Lines 26-27; and Page 8, Lines 15-28..

¹³ See, for example, specification, Page 2, Lines 32-33.

containing fluid¹⁴ and transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid¹⁵. Sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 50%¹⁶. The water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine¹⁷. Hydrate formation blockage is inhibited from forming within the flow line by the addition of the water to form a slurry of hydrates and water¹⁸.

Independent claim 25 is directed to a method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid¹⁹. The method comprises adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid²⁰ and transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid²¹. Sufficient water is added such that hydrate formation is self limiting as hydrocarbon hydrate forming components in the water cut enhanced hydrocarbon containing fluid are exhausted through the formation of hydrate particles²². The water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine²³. Hydrate formation

¹⁴ See, for example, specification, Page 2, Line 33 – Page 3, Line 2.

¹⁵ See, for example, specification, Page 3, Lines 2-3.

¹⁶ See, for example, specification, Page 3, Lines 14-15.

¹⁷ See, for example, specification, Page 2, Lines 8-22; Page 3, Lines 26-27; and Page 8, Lines 15-28.

¹⁸ See, for example, specification, Page 3, Lines 3-6 and 24.

¹⁹ See, for example, specification, Page 2, Lines 32-33.

²⁰ See, for example, specification, Page 2, Line 33 – Page 3, Line 2.

²¹ See, for example, specification, Page 3, Lines 2-3.

²² See, for example, specification, Page 3, Lines 20-24.

²³ See, for example, specification, Page 2, Lines 8-22; Page 3, Lines 26-27; and Page 8, Lines 15-28.

blockage is inhibited from forming within the flow line by the addition of the water to form a slurry of hydrates and water²⁴.

Independent claim 26 is directed to a method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid²⁵. The method comprises adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid²⁶ and transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid²⁷. Sufficient water is added such that the hydrocarbon containing fluid is converted from a water-in-oil emulsion to a water-continuous emulsion thereby decreasing emulsion viscosity and reducing pressure drop in the flow line²⁸. The water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine²⁹. Hydrate formation blockage is inhibited from forming within the flow line by the addition of the water to form a slurry of hydrates and water³⁰.

VI. Grounds of Rejection to be Reviewed on Appeal

Claims 1-26 stand finally rejected under 35 U.S.C. § 103(a) as allegedly obvious over U.S. Patent Nos. 5,491,269 (“Colle '269”), 6,222,083 (“Colle '083”), and 6,194,622 (“Peiffer”), considered separately.

²⁴ See, for example, specification, Page 3, Lines 3-6 and 24.

²⁵ See, for example, specification, Page 2, Lines 32-33.

²⁶ See, for example, specification, Page 2, Line 33 – Page 3, Line 2.

²⁷ See, for example, specification, Page 3, Lines 2-3.

²⁸ See, for example, specification, Page 3, Lines 8-12.

²⁹ See, for example, specification, Page 2, Lines 8-22; Page 3, Lines 26-27; and Page 8, Lines 15-28.

³⁰ See, for example, specification, Page 3, Lines 3-6 and 24.

VII. Argument

A. Examiner's Position

Colle '269 discloses a method for inhibiting the formation of clathrate hydrates in a fluid having hydrate forming constituents. More specifically, the method can be used in treating a petroleum fluid stream such as natural gas conveyed in a pipe to inhibit the formation of a hydrate restriction in the pipe. The hydrate inhibitors used for practicing the method are substantially water soluble polymers formed from a cyclic imino ether. Preferably, a solvent such as water, brine, alcohol, or mixtures thereof is used to produce an inhibitor solution or mixture to facilitate treatment of the petroleum fluid stream. (Abstract).

Colle '083 discloses a method for inhibiting the formation of gas hydrates in a petroleum fluid having hydrate-forming constituents. More specifically, the method can be used to treat a petroleum fluid, such as natural gas conveyed in a pipe, to inhibit the formation of a hydrate flow restriction in the pipe. The hydrate inhibitors used for practicing the method comprise substantially water soluble homopolymers and copolymers of N-acylhydroalanine derivatives which are esters or amides of N-acylhydroalanine. (Abstract).

Peiffer discloses method for inhibiting the formation of gas hydrates in a petroleum fluid having hydrate-forming constituents is claimed. More specifically, the method can be used to treat a petroleum fluid, such as natural gas conveyed in a pipe, to inhibit the formation of a hydrate flow restriction in the pipe. The hydrate inhibitors used for practicing the method comprise substantially water soluble homopolymers and copolymers of surfactant monomers. (Abstract).

The Examiner acknowledges that "Applicants' method claims differ [from the cited references] by not adding the polymer component to the solvent." (Final Office Action, Pages 3, 4, and 5). The Examiner further points out that the transitional phrase "consisting essentially of" – which is recited in each of independent claims 1, 14, 24, 25, and 26 – limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. *In re Herz*, 537 F.2d 549, 551-52, 190 USPQ 461, 463 (CCPA 1976) (emphasis in original).

The Examiner's "position [is] that the addition of the smallest amount in Colle '269, [Colle '083, or Peiffer,] about 0.01 % by weight, of the gas hydrate inhibitors to the water

component which optionally may contain salt or brine, does not affect the basic and novel characteristics of the claimed invention." (Final Office Action, Pages 3, 4, and 5).

B. Claims 1 and 5-26

1. Inclusion of Hydrate Inhibitors in the Water of the Present Claims Would Affect the Basic and Novel Characteristics of the Presently Claimed Invention

The present invention adds water to a hydrocarbon containing fluid to enhance the watercut of the hydrocarbon containing fluid. Sufficient water may be added such that, even though hydrates may form from hydrocarbon hydrate forming components in the hydrocarbon containing fluid, such hydrates cooperate with the added water to form a flowable slurry rather than allowing the hydrates to form a plug in the flow line. Accordingly, the claims recite that the water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine.

Appellants respectfully submit that the basic and novel characteristic of the claimed invention is the use of water added to the hydrocarbon containing fluid as the primary mechanism to prevent hydrate formation blockage in a flow line rather than using hydrate inhibitors (*i.e.*, to the exclusion of hydrate inhibitors). By not using hydrate inhibitors, the present invention provides a simple, cost-effective, and environmentally friendly strategy to address multiple flow assurance issues. See, for example, page 8, lines 15-28 of the present specification, which explain,

[B]rine also enhances the thermodynamic effect on hydrate stability produced by adding water to the system. Water also improves heat retention thereby improving thermal performance of the system which might be helpful for mitigating certain flow assurance issues. Switching to water or high salinity brine injection as the hydrate inhibition strategy is also expected to reduce chemical inhibitor presence in water and the oil phase. This will have significant benefits for topside water clean up and should result in reduced penalties imposed on an operator by downstream refineries due to the elimination of methanol from crude oil. Therefore, the proposed strategy is also a more environmentally friendly hydrate inhibition strategy as compared to the current thermodynamic and/or LDHI inhibitor injection strategy since storage, handling, and processing of flammable (methanol), potentially toxic (anti-agglomerant LDHIs) chemicals can be eliminated from offshore operations.

As noted in MPEP § 2141.02, subsection VI., a prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Appellants respectfully submit that each of the cited references teaches the use of **hydrate inhibitors** to prevent hydrate formation and thus blockage in a flow line. (See Column 2, Lines 23-27, of Colle '269; Column 2, Lines 24-29, of Colle '083; and Column 2, Lines 29-34, of Peiffer). Specifically, each of the cited references is directed to solving the need for a **gas hydrate inhibitor** that can be conveniently mixed at **low concentrations** in produced or transported petroleum fluids[, and which] reduce[s] the rate of nucleation, growth, and/or agglomeration of gas hydrate crystals in a petroleum fluid stream and thereby inhibit the formation of a hydrate blockage in the pipe conveying the petroleum fluid stream.

(Emphasis Added; Column 2, Lines 6-12, of Colle '269; Column 2, Lines 1-7, of Colle '083; and Column 2, Lines 6-12, of Peiffer).

Contrary to the Examiner's "position that the addition of the smallest amount in Colle '269, [Colle '083, or Peiffer,] about 0.01 % by weight, of the gas hydrate inhibitors to the water component which optionally may contain salt or brine, does not affect the basic and novel characteristics of the claimed invention" (Final Office Action, Pages 3, 4, and 5), Appellants respectfully submit that the inclusion of hydrate inhibitors, for example, hydrate inhibitors that can be mixed at **low concentrations** of about 0.01%, according to Colle '269, Colle '083, and Peiffer, **does materially affect the basic and novel characteristic of the claimed invention and moreover frustrates the purpose of the claimed invention**, as the claimed invention avoids not only the need to incur the cost of providing hydrate inhibitors, but also the complications of handling and disposal of hydrate inhibitors. See, for example, page 2, lines 8-22, of the present specification, which explain, with regard to dehydration, heat and/or pressure management or chemical injection with thermodynamic or low dosage hydrate inhibitors (LDHI) – technologies currently used to prevent hydrate blockage formation –

Each of these solutions for hydrate prevention can work, but all require significant capital or operating expense. The thermal and dehydration options are capital intensive, the thermodynamic inhibitor options are both capital and operationally intensive, and the LDHI option is operationally intensive. LDHIs also have additional risk associated with their application due to the

relative immaturity of the technology. Additionally, discharge water quality (toxicity) and crude quality (methanol content for example) issues can be a concern when using both thermodynamic inhibitors and LDHIs. There is also a general concern in the industry that as remote deepwater fields mature, water cuts may become high to the point where chemical injection for hydrate inhibition may offer considerable challenges--either due to the sheer volumes of thermodynamic inhibitor required or due to limitations on LDHI performance as mentioned above. Therefore, the issue of a cost-effective and reliable hydrate inhibition strategy for fields with high water cuts is a major challenge facing the industry.

The Examiner further contends that "the claimed inventive method of inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid is not affected by the addition of the hydrate inhibitors of the prior art." (Final Office Action, Page 6).

Appellants respectfully submit that the presently claimed methods *would* be affected by the addition of the hydrate inhibitors, especially in terms of mechanism of inhibiting hydrate formation blockage. Contrary to the position of the Examiner, which seems to be predicated upon a misconstruction of the prior art, the addition of hydrate inhibitors expressly conflicts with the teachings and purpose of the present invention. Inclusion of hydrate inhibitors in the presently claimed methods would provide the same function as the "addition of water" in the presently claimed methods, thus rendering the "addition of water" in the presently claimed invention superfluous.

2. Laboratory Inhibitor Evaluation Procedure of Colle '269

Further, none of Colle '269, Colle '083, or Peiffer discloses adding water to a hydrocarbon containing fluid to enhance the waternut of the hydrocarbon containing fluid, or more specifically, adding sufficient water such that, even though hydrates may form from hydrocarbon hydrate forming components in the hydrocarbon containing fluid, such hydrates cooperate with the added water to form a flowable slurry rather than allowing the hydrates to form a plug in the flow line.

For example, Colle '269 merely discloses a (ball stop) time of 6.2 minutes for a 0.95 centimeter stainless steel ball to stop moving the full length of a capped 15 mm ODx12.5 cm long test tube containing 3 mL of tetrahydrofuran (THF) and 9 mL of ASTM synthetic seawater (SSW) in a THF test. (Column 7, Lines 38-53). According to Colle '269, a

threshold inhibition effect for an inhibitor requires a ball stop time (BST) for a THF/SSW solution with an inhibitor which is about three times the BST for a THF/SSW control solution with no inhibitor present. (Column 7, Lines 54-65).

Accordingly, reversal of the final rejection of claims 1-26 under 35 U.S.C. § 103(a) as allegedly obvious over Colle '269, Colle '083, and Peiffer, considered separately, is respectfully requested.

C. Claims 2-4

Claim 2 recites the method of claim 1 wherein sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 50%; claim 3 recites the method of claim 1 wherein sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 75%; and claim 4 recites the method of claim 1 wherein sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 85%.

With regard to claims 2-4, the Examiner acknowledges that "the specific amounts of water in some of the dependent claims is not set forth in the prior art". (Final Office Action, Pages 2, 4, and 5). The Examiner asserts, however, that each of the cited references "teaches that any convenient concentration of inhibitor in the carrier solvent can be used." (Final Office Action, Pages 2-3, 4, and 5).

"The examiner is of the position that this claimed limitation does not differ from the prior art references which also added water (containing hydrate inhibitor) to the hydrocarbon fluid." (Final Office Action, Page 6).

However, the Examiner has not explained in what way any of the cited references discloses or suggests a water cut of the water cut enhanced hydrocarbon containing fluid of at least 50%, 75%, or 85% (*i.e.*, an oil in water emulsion containing at 50%, 75%, or 85% water cut).

Accordingly, reversal of the final rejection of claims 2-4 under 35 U.S.C. § 103(a) as allegedly obvious over Colle '269, Colle '083, and Peiffer, considered separately, is respectfully requested.

VIII. Claims Appendix

See attached Claims Appendix for a copy of the claims involved in the appeal.

IX. Evidence Appendix

See attached Evidence Appendix for copies of evidence relied upon by Appellant.

X. Related Proceedings Appendix

See attached Related Proceedings Appendix for copies of decisions identified in Section II., *supra*.

Respectfully submitted,

CROWELL & MORING LLP

Date: May 12, 2008

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VIII. CLAIMS APPENDIX

TheAppealed Claims

1. A method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid, the method comprising:
 - adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid, whereby the water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine; and
 - transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid;
 - whereby hydrate formation blockage is inhibited from forming within the flow line by the addition of the water.
2. The method of claim 1 wherein:
 - sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 50%.
3. The method of claim 1 wherein:
 - sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 75%.
4. The method of claim 1 wherein:
 - sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 85%.
5. The method of claim 1 wherein:
 - sufficient water is added to lower the hydrate equilibrium temperature of the water cut enhanced hydrocarbon containing fluid by at least 2°F relative to the original hydrocarbon containing fluid.
6. The method of claim 1 wherein:

sufficient water is added to lower the hydrate equilibrium temperature of the water cut enhanced hydrocarbon containing fluid by at least 5°F relative to the original hydrocarbon containing fluid.

7. The method of claim 1 wherein:

 salt is added to the water to increase the salinity of the water cut enhanced hydrocarbon containing fluid.

8. The method of claim 7 wherein:

 the weight % of salt in the water cut enhanced hydrocarbon containing fluid is at least 5%.

9. The method of claim 7 wherein:

 the weight % of the salt in the water cut enhanced hydrocarbon containing fluid is at least 10%.

10. The method of claim 7 wherein:

 the water phase of the water cut enhanced hydrocarbon containing fluid is continuous; and

 the water cut enhanced hydrocarbon containing fluid has a weight % of salt of at least 5%.

11. The method of claim 1 wherein:

 the water is added to the hydrocarbon containing fluid at a sub sea location.

12. The method of claim 1 wherein:

 sufficient water is added such that hydrate formation is self limiting as hydrocarbon hydrate forming components in the water cut enhanced hydrocarbon containing fluid are exhausted through the formation of hydrate particles.

13. The method of claim 1 wherein:

 sufficient water is added such that the hydrocarbon containing fluid is converted from a water-in-oil emulsion to a water-continuous emulsion thereby decreasing emulsion viscosity and reducing pressure drop in the flow line.

14. A system for preventing the formation of hydrate blockage in a flow line, the system comprising:

- a flow line for transporting a hydrocarbon containing fluid;
- a water injection conduit fluidly connected to the flow line to add water to the flow line, the water injection conduit being in fluid communication with one of a source of sea water, a source of fresh water, a subsea well or water produced from fluids from a hydrocarbon producing well bore; and
- a hydrocarbon source which is in fluid communication with the flow line to provide a hydrocarbon containing fluid to the flow line;

wherein water may be added to the flow line from the water injection conduit to produce a water cut enhanced hydrocarbon containing fluid, whereby the water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine.

15. The system of claim 14 wherein:
the hydrocarbon source is a well bore.

16. The system of claim 14 further comprising:
a water source fluidly connected to the water injection conduit; and
the water source is one of sea water, a sub sea water well or a water source mounted on an offshore platform.

17. The system of claim 14 further comprising:
a water separator fluidly connected to the flow line to receive fluids containing hydrocarbons and water, the water separator being capable of separating water from hydrocarbons.

18. The system of claim 17 wherein:
the flow line, water separator and water injection conduit cooperate to form a loop wherein water from the flow line may be separated by the water separator and delivered back to the water injection conduit to be reinjected into the flow line.

19. The system of claim 14 further comprising:

a salt dispenser which connects relative to the flow line so that salt may be added to increase the salinity of the hydrocarbon containing fluid.

20. The system of claim 14 wherein:

the water injection conduit is in fluid communication with a source of sea water.

21. The system of claim 14 wherein:

the water injection conduit is in fluid communication with a subsea well.

22. The system of claim 14 wherein:

The water injection conduit is in fluid communication with separated water produced from a hydrocarbon producing well bore.

23. The system of claim 14 wherein:

The water injection conduit is in fluid communication with a source of fresh water.

24. A method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid, the method comprising:

adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid, wherein sufficient water is added such that the water cut of the water cut enhanced hydrocarbon containing fluid is at least 50% and whereby the water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine; and

transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid;

whereby hydrate formation blockage is inhibited from forming within the flow line by the addition of the water to form a slurry of hydrates and water.

25. A method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid, the method comprising:

adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid, wherein sufficient water is added such that hydrate formation is self limiting as hydrocarbon hydrate forming components in the water cut enhanced hydrocarbon containing fluid are exhausted through the formation of hydrate particles and whereby the water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine; and

transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid;

whereby hydrate formation blockage is inhibited from forming within the flow line by the addition of the water to form a slurry of hydrates and water.

26. A method for inhibiting hydrate formation blockage in a flow line transporting a hydrocarbon containing fluid, the method comprising:

adding water to a hydrocarbon containing fluid to produce a water cut enhanced hydrocarbon containing fluid, wherein sufficient water is added such that the hydrocarbon containing fluid is converted from a water-in-oil emulsion to a water-continuous emulsion thereby decreasing emulsion viscosity and reducing pressure drop in the flow line and whereby the water cut enhanced hydrocarbon containing fluid consists essentially of hydrocarbon containing fluid, water, and optionally salt or brine; and

transporting the water cut enhanced hydrocarbon containing fluid through a flow line under conditions that would be conducive for the formation of hydrates in the original hydrocarbon containing fluid;

whereby hydrate formation blockage is inhibited from forming within the flow line by the addition of the water to form a slurry of hydrates and water.

IX. EVIDENCE APPENDIX

NONE

X. RELATED PROCEEDINGS APPENDIX

NONE